

Frederick Soddy—Pioneer in Radioactivity

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Frederick Soddy, a British chemist, won the 1921 Nobel Prize in chemistry for his contributions to the knowledge of the chemistry of radioactive substances and his investigations into the origin and nature of isotopes. In 1913, he was the first to announce the concept that atoms can be identical chemically and yet have different atomic weights. These related atoms are called *isotopes*, a word coined by Soddy, meaning same or equal place (Greek, *isos topos*).

Soddy, the youngest of 7 children of a London merchant, was born on September 2, 1877, in Eastbourne, Sussex, in southern England (about 60 miles south of London). Soddy's mother died when he was 2 years old, and he was raised by a half sister. He attended the University of Wales in Aberystwyth, a seaport town in western Wales, for 1 year (1893-1894) before entering Merton College, Oxford University, in 1895, where he majored in chemistry; William Ramsay (1852-1916) was one of his teachers. After receiving his bachelor's degree in chemistry in 1898, Soddy conducted independent research at Oxford University for 2 years (1898-1900).

In 1900, Soddy went to Canada to pursue postgraduate work at McGill University, Montreal, with Ernest Rutherford (1871-1937). Soddy remained in Canada until 1902, during which time he and Rutherford announced a general theory of radioactive disintegration. From 1903 to 1904, Soddy worked with his former teacher Ramsay, now at the University College in London. At the University College, Soddy identified helium as a product of the decay of radium. In 1904, he became a lecturer at the University of Glasgow, Scotland, a position he held until 1914. In 1910, Soddy was elected a Fellow of the Royal Society.

In 1914, Soddy accepted the position of professor of physical chemistry at the University of Aberdeen (Scotland), where he remained until 1919, when he became professor of inorganic and physical chemistry at Oxford University. In 1920 while at Oxford, Soddy predicted that, because the rates of radioactive decay were known, isotopes could be used to determine the geologic age of rocks and fossils. This prediction was later fulfilled, leading to the development of modern radioactive dating techniques, which were devised by American physicist Willard Libby (1908-1980) in the 1940s, for which he won the 1960 Nobel Prize in chemistry. Soddy wrote extensively in the field of his expertise; 2 of his best known books are *Matter and Energy* (1912) and *The Story of Atomic Energy* (1949). After his wife died in 1936, Soddy retired from Oxford University at the age of 59 years.

After his time in Glasgow, Soddy withdrew from active research in chemistry and radioactivity and devoted his time to economic, social, and political theory and wrote several books on these subjects. He became a controversial figure and an outspoken critic on social issues, blaming scientists for their disregard of the social consequences of their work, including his own work on radioactivity.

Soddy received many honors and awards besides the Nobel Prize. On September 22, 1956, at the age of 79 years, he died in Brighton, Sussex. He was honored on a stamp (Scott No. 1389) issued by Sweden in 1981. The stamp is one in a set of 3 stamps honoring 1921 Nobel Prize winners. The others honored were Albert Einstein (1979-1955) in physics and Anatole France (1844-1924) in literature.

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